

ABSTRACT

Methods, apparatuses, and systems for encoding information symbols comprising loading information symbols into a data array with $n^{(1)}$ rows and $n^{(2)}$ columns, wherein

5 each column has $k_i^{(1)}$ information symbols, and wherein $k^{(1)}$ is an array that has at least two different values, encoding each column with a code $C_i^{(1)}$ from a family of nested codes $\mathbf{C}^{(1)}$, wherein $\mathbf{C}^{(1)}$ includes two different nested codes, and encoding each row with a code $C^{(2)}$.